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FOREST RESEARCH NOTES

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Use Of Sprays To Control The Pales Weevil (Hylobius Pales)

The Pales weevil, one of the serious insect pests of the Northeast, comes into areas that have been recently cut or burned. The beetles feed on the bark of seedlings and young trees up to 18 inches high. They feed just above the ground line, often girdling the trees and killing them. They attack practically all conifers, but white pine is their favorite.

Because of this insect, it is often necessary to delay planting on cut or burned areas for 2 or 3 years. Meanwhile hardwood sprouts, brush, and weeds come in, and they crowd out the pine seedlings after they are planted.

An effective method of spraying has been developed to protect seedlings from Pales weevil damage, so that planting need not be delayed. This method was tested on the Harvard Forest at Petersham, Mass., after the hurricane of 1938. It was found that only one treatment is needed to protect white pine seedlings from weevil damage.

When to spray.--Spraying may be done from March to May, or in August.

How to spray.--Since the beetles feed entirely on the bark, try to get thorough uniform coverage of the bark without overdosing the plant. The easiest and quickest way is to spray seedlings in beds. Hand atomizers may be used for small beds. For large beds knapsack sprayers or mist blowers are more efficient.

Cost of treating beds is only a few cents per 100 plants. In plantations one man can treat 3,000 to 4,000 trees per day with a knapsack sprayer. Natural stands require more time, depending on the number and distribution of seedlings, condition of the undergrowth, etc. In natural stands you can use knapsack sprayers or--if the terrain is suitable--power hydraulic sprayers.

Bundles of trees can be treated by dipping them in a spray mixture. Submerge the whole trees--all but the roots--in the insecticide. Keep the mixture well stirred. Dip each bundle for about 30 seconds.

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Equipment.--Choice of equipment will depend on the size of the operation and local conditions. The knapsack sprayer should have a narrow-angle cone-type nozzle with an 0.025- to 0.035-inch opening. The power hydraulic sprayer should operate at a pressure of 100 to 300 pounds, and its spray nozzle should have a 1/16- to 3/32-inch opening. Shut-off valves should be used that work quickly and easily and do not leak when closed.

Table 1.--Quantity of spray to apply

Trees in--	Hand atomizer & mist blower	Knapsack sprayer	Power hydraulic sprayer
Beds, per 1,000 square feet	1 quart	2½ quarts	5 quarts
Plantations or natural areas, per 1,000 trees	1½ gallons	3 gallons	10 gallons

All spray mixtures should be strained into the spray tank through 40- to 50-mesh metal cloth to remove lumps and trash. All spraying equipment should be cleaned thoroughly after use.

Formulas and mixing.--For knapsack sprayers use: lead arsenate, 1 pound; water, 2½ gallons; and drying oil (fish, linseed, or soybean), 4 fluid ounces (¼ pint). Mix as follows:

1. Pour 1 gallon water into mixing pail or barrel.
2. Add 1 pound lead arsenate. Stir with hand paddle.
3. Add 4 ounces drying oil.
4. Add remaining 1½ gallons water and stir.

For 5-, 10-, 25-, and 100-gallon lots multiply these amounts by 2, 4, 10, and 40 respectively.

Formula for hand atomizers and mist blowers: water, 1 gallon; lead arsenate, 1 pound; drying oil, 4 ounces.

Formula for power hydraulic sprayers: water, 5 gallons, lead arsenate 1 pound; oil, 4 ounces.

Formula for dipping bundles: water, 10 gallons; lead arsenate, 2 pounds; oil, 6 ounces. To mix these three formulas; while stirring, add ingredients in order listed.

--S. F. POTTS

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